task and prone to human error. Also, to watch over the operation of the cantilever, personnel often is positioned at relatively hazardous areas.

GENERAL DESCRIPTION

It is an object of the present invention to provide a method that obviates at least one of the above mentioned drawbacks. In particular, it is aimed to reduce the risk of moving a cantilever against a part of the platform or against an obstacle on the platform.

According to the invention, this object is achieved by providing a method according to claim 1.

Specifically, in accordance with an aspect of the disclosure, there is provided a method for monitoring movement of a cantilever structure of an offshore platform on the offshore platform, such as a jack-up platform or a self-elevating vessel. The method can include:

- providing a boundary model containing boundary limiting information of positions of the cantilever structure, wherein the boundary limiting information comprises at least position information of boundary limiting elements, such as obstacles on the platform or obstacles on or at the cantilever;
- providing, during movement of the cantilever, position information of the cantilever representing an actual position of the cantilever;
- determining, during movement of the cantilever, a difference between the cantilever position information and the boundary limiting information of the boundary model;
- providing an output signal when the determined difference exceeds a predefined threshold value.

results in an update of the boundary model, e.g. blocking a certain area and preventing the cantilever from entering this sector.

The control unit may be arranged to receive a signal from said tracking device, to identify the signal to locate the source and to react accordingly by updating the boundary model. Alternatively, a scanning or sensing device may be provided that is arranged to receive information from such tracking devices or to actively scan the environment to detect such tracking device. The scanning device may then provide the detected position information to the control unit to update the boundary model prior or during movement of the cantilever structure.

The invention further relates to a computer program product and to an offshore platform.

In accordance with an aspect of the disclosure, there is provided a system for monitoring movement of a cantilever structure of an offshore platform on the offshore platform, such as a jack-up platform. The system can include:

- a control unit comprising a data processor with a memory containing a boundary model in computer readable and executable form containing a boundary model containing boundary limiting information of positions of the cantilever structure, wherein the boundary limiting information comprises at least position information of boundary limiting elements, such as obstacles on the platform or obstacles on or at the cantilever; wherein the control unit is configured for receiving, during movement of the cantilever, position information of the cantilever representing an actual position of the cantilever; and determining, during movement of the cantilever, a difference between the cantilever position information and the boundary limiting information of the boundary model; further configured for generating an output information when the determined difference exceeds predefined threshold value;
- an output unit for receiving the output information to generate an output signal.

In accordance with an aspect of the disclosure, there is provided a control unit which can include a data processor with a memory containing a boundary model in computer readable and executable form containing a boundary model containing boundary limiting information of positions of the cantilever structure, wherein the boundary limiting information comprises at least position information of boundary limiting elements, such as obstacles on the platform or obstacles on or at the cantilever; wherein the control unit is configured for receiving, during movement of the cantilever, position information of the cantilever representing an actual position of the cantilever; and determining, during movement of the cantilever, a difference between the cantilever position information and the boundary limiting information of the boundary model; further configured for generating an output information when the determined difference exceeds a predefined threshold value.

Particular elaborations and embodiments of the invention are set forth in the dependent claims.

Further features, effects and details of the invention appear from the detailed description and the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic side view of an offshore platform with a first example of a cantilever structure according to the invention;

Fig. 2 is a schematic top plan view of the platform shown in Fig. 1; and

Fig. 3 shows an example of a boundary model;

Fig. 4 is flow chart of an example of a method according to the invention.

CLAIMS

1. A method for monitoring movement of a cantilever structure of an offshore platform on the offshore platform, such as a jack-up platform or a self-elevating vessel, comprising:

- providing a boundary model containing boundary limiting information of positions of the cantilever structure, wherein the boundary limiting information comprises at least position information of boundary limiting elements, such as obstacles on the platform or obstacles on or at the cantilever;
- providing, during movement of the cantilever, position information of the cantilever representing an actual position of the cantilever;
- determining, during movement of the cantilever, a difference between the cantilever position information and the boundary limiting information of the boundary model;
- providing an output signal when the determined difference exceeds a predefined threshold value.

2. The method according to claim 1, further comprising inputting of at least one boundary limiting information prior to movement of the cantilever structure.

3. The method according to claim 1 or 2, further comprising updating the boundary model during movement of the cantilever structure.

4. The method according to any one of the preceding claims, further comprising scanning a surrounding environment of the cantilever structure and/or platform for the presence of a boundary limiting element.

5. The method according to claim 4, wherein providing of the boundary limiting information comprises providing a scanned position information of the boundary limiting element.

6. The method according to any of the preceding claims, wherein providing of the boundary limiting information comprises providing a horizontal position and/or a vertical position of an extreme portion of a boundary limiting element.

7. The method according to claim 6, wherein determining a difference between the cantilever position information and the boundary limiting

information comprises determining a difference in horizontal and/or vertical position information.

8. The method according to any of the preceding claims, wherein providing boundary limiting information comprises providing position information of at least an extreme portion of a temporary obstacle, such as a movable crane.

9. System for monitoring movement of a cantilever structure of an offshore platform on the offshore platform, such as a jack-up platform, comprising

- a control unit comprising a data processor with a memory containing a boundary model in computer readable and executable form containing a boundary model containing boundary limiting information of positions of the cantilever structure, wherein the boundary limiting information comprises at least position information of boundary limiting elements, such as obstacles on the platform or obstacles on or at the cantilever; wherein the control unit is configured for receiving, during movement of the cantilever, position information of the cantilever representing an actual position of the cantilever; and determining, during movement of the cantilever, a difference between the cantilever position information and the boundary limiting information of the boundary model; further configured for generating an output information when the determined difference exceeds predefined threshold value;
- an output unit for receiving the output information to generate an output signal.

10. System according to claim 9, further comprising an input unit for inputting the boundary limiting information.

11. System according to claim 9 or 10, further comprising an interface unit containing the input unit and/or the output unit.

12. System according to any of the claims 9 – 11, further comprising a scanning arrangement for scanning a position of at least an extreme end portion of a boundary limiting element.

13. System according to claim 12, wherein the scanning arrangement is connected to the control unit for feeding the scanned information to the boundary model.

14. System according to any of the claims 9 – 13, wherein the control unit is configured to perform any of the steps of the method of claims 1 – 8.

15. A control unit comprising a data processor with a memory containing a boundary model in computer readable and executable form containing a boundary model containing boundary limiting information of positions of the cantilever structure, wherein the boundary limiting information comprises at least position information of boundary limiting elements, such as obstacles on the platform or obstacles on or at the cantilever; wherein the control unit is configured for receiving, during movement of the cantilever, position information of the cantilever representing an actual position of the cantilever; and determining, during movement of the cantilever, a difference between the cantilever position information and the boundary limiting information of the boundary model; further configured for generating an output information when the determined difference exceeds a predefined threshold value.

16. The control unit of claim 15, wherein the control unit is configured to perform any of the steps of the method of claims 1 – 8.

17. Computer program product for monitoring movement of a cantilever structure of an offshore platform, which computer program product comprises instructions for causing a processor to perform at least one of the steps of the method according to any of the claims 1 – 8.

18. Offshore platform comprising a system according to any of the claims 9 – 14.